

**DETAILED ACTION****Continued Examination Under 37 CFR 1.114**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/07/11 has been entered.

**Specification**

The amendment filed 02/07/11 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: 'ring-shaped end' as it appears in amended paragraph [0012].

Applicant is required to cancel the new matter in the reply to this Office Action.

**Claim Objections**

Claim 15 is objected to because of the following informalities: 'Faster' should be replaced by 'fastener'. Appropriate correction is required.

**Claim Rejections - 35 USC § 112**

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 12-15, and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The current amended claim 1 contains new matter not originally described in the specification, namely in lines 16, 23, 28 and 30 of claim 1, ‘ring shaped’. In new claim 13, ‘non-rectangular cross-section’ is not disclosed in the specification.

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11, 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Publication 2002/0062080 A1 (Okawa(‘080)).

In re claims 1 and 3, Okawa(‘080), teach an ultrasonic probe comprising; an ultrasonic transducer unit emitting ultrasonic waves while swinging ([0011]), a motor

adapted to generate power for swinging said ultrasonic transducer unit ([0006]), a first power transmission device, the first power transmission device connected to a rotating shaft of said motor and transmitting said power ([0014]-[0016]; [0059]-[0062]), a drive device connected to said first power transmission device, the drive device rotated by said transmitted power ([0011]), a cable-like second power transmission device, the cable-like second power transmission device adapted to transmit said power by the rotation of said drive device ([0014]-[0016]), a swing device (abstract), on which said ultrasonic transducer unit is mounted, swinging said ultrasonic transducer unit with said power due to the rotation of said drive device transmitted through said second power transmission device, a first fixing device to which one of the ends of the second power transmission device is fixed and which is fixedly attached to said swing device together with said fixed second power transmission device ([0051]), a second fixing device fixing, to said drive device, an opposite end of said second power transmission device, which is opposed to the end that is fixed at the first fixing device ([0019]). Additionally, Okawa('080) teach a second fixing device comprising a screw that tightens power transmission device to said drive device ([0019]).

The examiner notes that Okawa('080) do not expressly teach that the ends of the second power transmission device are ring-shaped or that the first fixing device is removably attached to swing device. However, the examiner notes that Okawa('080) do teach fastening holes at each end of drive belt (fig 4a, items 31a and 31c) which are used for the same purpose as the ring-shaped ends for removably fastening the second power transmission device to both the drive device and the swing device and, hence, the loop ends would have been an obvious design decision in the absence of any further showing

of criticality or unexpected result. Additionally the examiner notes that the projections described in Okawa('080) would necessarily be removable using known manufacturing techniques or cutting tools.

In re claims 2 and 10-11, Okawa('080) teach a fixing device using the tension of the drive belt (fig 3, item 5a), made out of an adjusting material that would be reasonably capable of being deformable by external forces, and having a plurality of holes for synchronizing the drive pulley with the drive belt for reliable transducer control (fig 5a). It is noted that Okawa('080) fail to teach penetrating holes that are interconnected with one another. However, using overlapping holes and grooved surfaces as a method of integrally fixing materials together is well known in the art and would have been an obvious design choice in the absence of any further showing of criticality or unexpected result.

In re claim 4, Okawa('080) do not expressly teach a screw having a plate-like portion for protecting second power transmission device from damage during screw tightening. However, washers of varying sizes are well known in the fastener art and are used for shielding from screw tightening damage and would have been an obvious design choice in the absence of any further showing of criticality or unexpected result.

In re claims 5-7 and 16, Okawa('080) teach the invention as described above, including a shaft attached to the motor ([0079]). Further, Okawa('080) teach a movably adjustable idler roller device that contacts the drive belt at an intermediate location (fig 2, item 21). The examiner notes that Okawa('080) fail to expressly teach an intermediate pulley moving towards and away from the drive device and additionally, moving parallel to the swinging device. The examiner interprets that the slidable, swingable arm (item

22, [0059]) does in fact provide for moving the idler roller device in a direction towards and away relative to the drive device and, further, it would have been obvious to one of ordinary skill in the art to modify the idler roller device as disclosed by Okawa('080) with the attached swingable arm positioner in order to impart tension on the second power transmission device in any adequate direction for removing slack from the power transmission device in order to provide efficient power transmission.

The examiner further notes that the functional language following 'is movable' is directed to an intended use and does not provide any further structural limitation to the device claim. Further, the adjustable idler roller as disclosed in Okawa('080) would be capable of moving in a direction parallel to the rotation shaft of the transducer unit/swing device.

In re claims 8-9, Okawa('080) teach the invention as described above, and further teach connecting a drive belt to drive pulleys using screws. The examiner interprets this connection point to be a 'connecting section'. The examiner further notes that this connection point would necessarily be deformable when exposed to an adequate amount of force.

In re claims 14 and 15, Okawa('080) teach the invention as described above, and further, Okawa('080) teach a screw as a fixing means as described above and the swing ultrasound device of Okawa('080) would necessarily be fastened with the first fixing device in order to translate power from the motor to the swing device.

In re claims 17 and 18, Okawa('080) teach the invention as described above, and further, teach a fixing section ([0067]) and further, the examiner notes that the claims

starting with ‘used for’ are directed to functional language or an intended use which do not provide further structural limitations to the device claims.

Claims 12-13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okawa(‘080) as applied to claims 1 and 7 above, in view of US Publication 2004/0266574 A1 (Jinno(‘574)).

In re claims 12 and 13, Okawa(‘080) teach the invention as described above except for expressly teaching a second power transmission device including a wire or a structure having a cable shape and a non-rectangular cross section. However, in the field of electromechanical devices and power transmission, Jinno('574) teach a power transmission device composed of a wire ([0011]), which the examiner interprets as having a cable shape and a non-rectangular cross-section. Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ultrasonic probe and pulley system as disclosed by Okawa('080) with the power transmission wire device for electromechanical apparatuses as disclosed by Jinno('574) in order to transmit power to a tool or device using wires as an alternative to belts.

In re claim 16, Okawa(‘080) teach the invention as described above, except for expressly teaching a pulley movable parallel to another rotation shaft such as the transducer unit. Jinno(‘574), however, teach a pulley system wherein one pulley is movable in a direction parallel to the rotation shaft of another pulley (fig 18]).

**Response to Arguments**

Applicant's arguments filed 02/07/11 have been fully considered but they are not persuasive.

Specifically concerning the 35 U.S.C. 112 1<sup>st</sup> new matter rejection of claim 1 regarding previously 'loop' ends and currently 'ring-shaped' ends, the examiner respectfully disagrees. The specification originally supports a ring shaped wire ([0012]). It alternatively supports splitting the wire into two portions each with two ends but there is no support for the ends of the wire to be ring-shaped. It additionally supports fixing the ends of the wire through various means including via screw and clamping plate ([0033]-[0036]) but provides no ring-shaped end. The examiner further notes that there is no support of ring-shaped ends. The examiner does concede, however, that 'removably' is no longer considered new matter as the argument concerning removable screws was persuasive. Regarding the new matter rejection of claim 13, and whether the 'non-rectangular cross- section' is supported in the specification, the examiner respectfully disagrees as this claim element appears to have been derived from Okawa('080) ([0052]).

Regarding the argument of claim 1 as to whether the projections of Okawa('080) can be removable, the examiner respectfully disagrees as methods for removing surface projections from a device are well known in the manufacturing field or using cutting tools. Concerning the argument regarding claims 1 and 7 as to whether Okawa('080) teach a cable-like transmission device, the examiner respectfully disagrees as the drive belt transmission device in Okawa('080) can be described as cable-like, particularly when the belt width is narrow. Regarding whether the first fixing device described in Okawa('080) is deformable by external forces, the examiner respectfully disagrees as the

claim as written does not specify a material having any further characteristics other than being deformable by external forces, hence, commonly used transducer materials are interpreted as being deformable to a relative degree. Furthermore, crimping devices for joining two end pieces to create a single piece are well known in a variety of fields including manufacturing/construction, jewelry making, and fishing tackle.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL HUNTLEY whose telephone number is (571)270-1217. The examiner can normally be reached on Monday through Friday, 7:30-4, alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3737

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